

REMARKS

By this Amendment, claims 1, 3, 9, 20, 22 and 30 are amended, claims 4-8, 10, 18, 19, 24-29 and 31 are cancelled, and claims 1-3, 9, 11-17, 20-23, 30 and 32-38 are pending. Reconsideration and allowance of the present application based on the above amendments and the following remarks is respectfully requested.

Rejections Under 35 U.S.C. § 112

Claims 1-38 were rejected under 35 U.S.C. § 112, second paragraph, because independent claims 1, 3, 20 and 22 contained the allegedly indefinite terms “bright” and “smooth.” Applicants have amended the claims to remove the terms “bright” and “smooth,” and the rejection is overcome.

Rejections Under 35 U.S.C. § 102

Claims 1-3, 7, 8, 10-14, 20-22, 27-32, 34 and 35 were rejected under 35 U.S.C. § 102(b) over Manabe et al., U.S. Patent No. 4,369,225. By this Amendment, claims 7, 8, 10, 27-29 and 31 are cancelled. Therefore, the rejection with respect to cancelled claims 7, 8, 10, 27-29 and 31 is moot. Applicants traverse the rejection with respect to remaining claims 1-3, 11, 12, 13, 14, 20-22, 30, 32, 34 and 35 because Manabe et al. does not disclose all of the features recited in claims 1-3, 11, 12, 13, 14, 20-22, 30, 32, 34 and 35.

For example, Manabe et al. fails to disclose a surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1 and 3. Similarly, Manabe et al. fails to disclose a method for manufacturing a surface structure including forming a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 20 and 22. To the contrary, Manabe et al. is merely directed to flexible lustrosely metallized resinous articles including a metal layer made from a nickel-chromium alloy (column 5, lines 4-5).

Therefore, Manabe et al. does not disclose the claimed surface structure and method for manufacturing the surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1, 3, 20 and 22.

Thus, the rejection is traversed, and independent claims 1, 3, 20 and 22 are allowable. Dependent claims 2, 11-14, 21, 30, 32, 34 and 35 are allowable at least by virtue of dependency. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claims 1-3, 7, 8, 10-12, 18, 20-22, 27-29 and 31-33 were rejected under 35 U.S.C. § 102(e) over Mokerji, U.S. Patent No. 6,096,426 (hereinafter Mokerji '426). By this Amendment, claims 7, 8, 10, 18, 27-29 and 31 are cancelled. Therefore, the rejection with respect to cancelled claims 7, 8, 10, 18, 27-29 and 31 is moot. Applicants traverse the rejection with respect to remaining claims 1-3, 11, 12, 20-22, 32 and 33 because Mokerji '426 fails to disclose all of the features recited in claims 1-3, 11, 12, 20-22, 32 and 33.

For example, Mokerji '426 fails to disclose a surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1 and 3. Similarly, Mokerji '426 fails to disclose a method for manufacturing a surface structure including forming a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 20 and 22. To the contrary, Mokerji '426 is merely directed to a coating having the appearance of black chrome, including a chrome/nickel alloy layer (column 2, line 66).

Therefore, Mokerji '426 does not disclose the claimed surface structure and method for manufacturing the surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1, 3, 20 and 22.

Thus, the rejection is traversed, and independent claims 1, 3, 20 and 22 are allowable. Dependent claims 2, 11, 12, 21, 32 and 33 are allowable at least by virtue of dependency. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claims 1-3, 5, 9, 11, 12, 18, 20-22, 25, 30, 32 and 33 were rejected under 35 U.S.C. § 102(e) over Mokerji, U.S. Patent No. 6,168,242 (hereinafter Mokerji '242). By this Amendment, claims 5, 18 and 25 are cancelled. Therefore the rejection with respect to cancelled claims 5, 18 and 25 is moot. Applicants traverse the rejection with respect to remaining claims 1-3, 9, 11, 12, 20-22, 30, 32 and 33 because Mokerji '242 fails to disclose all of the features recited in claims 1-3, 9, 11, 12, 20-22, 30, 32 and 33.

For example, Mokerji '242 fails to disclose a surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1 and 3. Similarly, Mokerji '242 fails to disclose a method for manufacturing a surface structure including forming a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 20 and 22. To the contrary, Mokerji '242 is merely directed to a zirconium nitride coating having a top layer. A zirconium compound, titanium compound or zirconium/titanium alloy compound can be used (column 3, lines 6-7).

Therefore, Mokerji '242 does not disclose the claimed surface structure and method for manufacturing the surface structure including a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 1, 3, 20 and 22.

Thus, the rejection is traversed, and independent claims 1, 3, 20 and 22 are allowable. Dependent claims 2, 9, 11, 12, 21, 30, 32 and 33 are allowable at least by virtue of dependency. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 1, 2, 9, 11, 18-21, 23, 29, 30 and 32 were rejected under 35 U.S.C. § 103(e) over Kaumle et al., U.S. Patent No. 6,068,890, in view of Schwing et al. (U.S. Patent No. 5,656,335). By this Amendment, claims 18, 19 and 29 are cancelled. Therefore, the rejection with respect to cancelled claims 18, 19 and 29 is moot. Applicants traverse the rejection with respect to remaining claims 1, 2, 9, 11, 20, 21, 23, 30 and 32 because the combined teaching of Kaumle et al. and Schwing et al. fails to disclose or suggest all of the features recited in claims 1, 2, 9, 11, 20, 21, 23, 30 and 32.

For example, the combined teaching of Kaumle et al. and Schwing et al. fails to disclose or suggest a surface structure including a thin metal film made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum, as recited in independent claims 1 and 3. Furthermore, the combined teaching of Kaumle et al. and Schwing et al. fails to disclose or suggest a method for manufacturing a surface structure including forming a thin metal film made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum, as recited in independent claims 20 and 22.

To the contrary, Kaumle et al. merely discloses a metal layer formed by magnetron atomization in which aluminum is used as one target and titanium is used as the other target in a nitrogen atmosphere to produce colors (column 4, lines 58-61). Kuamle et al. is silent as to ranges of weight % of titanium and aluminum, let alone that the metal layer is a titanium-aluminum alloy containing 20-50% by weight of titanium and 50-80% by weight of aluminum.

Schwing et al. fails to remedy the deficiencies of Kaumle et al. Schwing et al. is merely directed to coating a substrate with a metal giving a polished effect. Schwing et al. discloses that a metal such as aluminum, chromium, titanium, silver, or gold is vaporized in a plasma in order to coat the substrate (column 3, lines 10-12), but fails to disclose or suggest a

metal film made from a titanium-aluminum alloy with specific ranges of weight % of titanium and aluminum.

Therefore, the combined teaching of Kaumle et al. and Schwing et al. does not disclose or suggest the claimed surface structure and method for manufacturing a surface structure including a thin metal film made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum, as recited in independent claims 1, 3, 20 and 22.

Thus, Applicants submit that independent claims 1, 3, 20 and 22 are allowable and that the rejection is traversed with respect to rejected independent claims 1 and 20. Dependent claims 2, 9, 11, 21, 23, 30 and 32 are allowable at least by virtue of dependency from allowable independent claims 1, 3, 20 or 22. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claims 4 and 24 were rejected under 35 U.S.C. § 103(a) over Manabe et al. in view of Hartline, U.S. Patent No. 3,847,599. By this amendment, claims 4 and 24 are cancelled. Therefore, the rejection is moot and should be withdrawn.

Claims 6 and 26 were rejected under 35 U.S.C. § 103(a) over Kaumle et al. in view of Jain et al., U.S. Patent No. 5,296,056. By this amendment, claims 6 and 26 are cancelled, and the subject matter of claim 6 has been incorporated into independent claims 1 and 3. Therefore, the rejection is moot with respect to cancelled claims 6 and 26, and should be withdrawn. With respect to independent claims 1 and 3, Applicants submit that the combined teaching of Kaumle et al. and Jain et al. fails to disclose or suggest all of the features recited in independent claims 1 and 3.

As explained above, Kaumle et al. fails to disclose or suggest a thin metal film made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum, as recited in independent claims 1 and 3.

Jain et al. fails to remedy the deficiencies of Kaumle et al. because Jain et al. is merely directed to titanium aluminide alloys containing approximately 54 weight % of titanium and 29 weight % of aluminum, as noted in the Office Action. Furthermore, Jain et al. teaches that lower amounts of aluminum (corresponding to higher amounts of titanium) are preferable for high strength. Jain et al. discloses that “lower aluminum content [than 48 atomic percent] resulted in significantly higher strength.” (column 4, lines 35-39).

Therefore, the combined teaching of Kaumle et al. and Jain et al. fails to disclose or suggest a thin metal film made from a titanium-aluminum alloy containing 20-50% by weight

of titanium and 80-50% by weight of aluminum, as recited in independent claims 1 and 3. Thus, Applicants respectfully submit that the claims are allowable over Kuamle et al. in view of Jain et al.

Claims 15 and 36 were rejected under 35 U.S.C. § 103(a) over Manabe et al. further in view of Tsuge et al., U.S. Patent No. 5,227,451. Applicants traverse the rejection because the combined teaching of Manabe et al. and Tsuge et al. fails to disclose or suggest all of the features recited in the claims.

Claims 15 and 36 depend from independent claims 3 and 22, respectively. As explained above with respect to independent claims 3 and 22, Manabe et al. fails to disclose a thin metal film made from a titanium-aluminum alloy. Tsuge et al. fails to remedy the deficiencies of Manabe et al. because Tsuge et al. is merely directed to a urethane prepolymer and polyurethane compositions comprising the prepolymer, and is not directed to metal alloys. Therefore, Applicants submit that the combined teaching of Manabe et al. and Tsuge et al. fails to disclose or suggest a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 3 and 22. Accordingly, Applicants respectfully submit that claims 15 and 36 are allowable at least by virtue of their dependence from independent claims 3 and 22, respectively. Thus, the rejection is overcome, and Applicants respectfully request that the rejection be withdrawn.

Claims 16 and 37 were rejected under 35 U.S.C. § 103(a) over Manabe et al. further in view of Dietz et al., U.S. Patent No. 5,264,032. Applicants traverse the rejection because the combined teaching of Manabe et al. and Dietz et al. fails to disclose or suggest all of the features recited in the claims.

Claims 16 and 37 depend from independent claims 3 and 22, respectively. As explained above with respect to independent claims 3 and 22, Manabe et al. fails to disclose a thin metal film made from a titanium-aluminum alloy. Dietz et al. fails to remedy the deficiencies of Manabe et al. because Dietz et al. is merely directed to pigment preparation in non-metal compositions, and is not directed to metal alloys. Therefore, Applicants submit that the combined teaching of Manabe et al. and Dietz et al. fails to disclose or suggest a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 3 and 22. Accordingly, Applicants respectfully submit that claims 16 and 37 are allowable at least by virtue of their dependence from independent claims 3 and 22, respectively. Thus, the rejection is overcome, and Applicants respectfully request that the rejection be withdrawn.

Claims 17 and 38 were rejected under 35 U.S.C. § 103(a) over Manabe et al. further in view of Hirai et al., U.S. Patent No. 4,367,307. Applicants traverse the rejection because the combined teaching of Manabe et al. and Hirai et al. fails to disclose or suggest all of the features recited in the claims.

Claims 17 and 38 depend from independent claims 3 and 22, respectively. As explained above with respect to independent claims 3 and 22, Manabe et al. fails to disclose a thin metal film made from a titanium-aluminum alloy. Hirai et al. fails to remedy the deficiencies of Manabe et al. because Hirai et al. is merely directed to a polyurethane composition suitable for use as a component of artificial leather or as a coating for fabrics, and is not directed to metal alloys. Therefore, Applicants submit that the combined teaching of Manabe et al. and Hirai et al. fails to disclose or suggest a thin metal film made from a titanium-aluminum alloy, as recited in independent claims 3 and 22. Accordingly, Applicants respectfully submit that claims 17 and 38 are allowable at least by virtue of their dependence from independent claims 3 and 22, respectively. Thus, the rejection is overcome, and Applicants respectfully request that the rejection be withdrawn.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

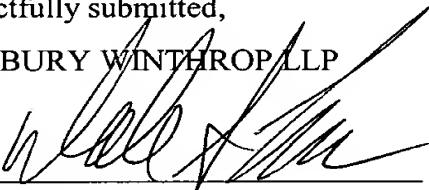
Attached is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned "Version with markings to show changes made".

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1, 3, 9, 20, 22 and 30 are amended as follows:

1. (Amended) A [bright] surface structure formed on [a member made from a metal or a resin] an aluminum wheel for an automobile, said structure comprising:

(a) a resin film coated on said [member] aluminum wheel; and

(b) a thin metal film formed on said resin film, [said thin metal film being made from a material selected from the group consisting of stainless steel, a titanium alloy and a nickel alloy, wherein said metal film has a smooth surface] wherein said thin metal film is made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum.

3. (Amended) A [bright] surface structure formed on [a member made from a metal or a resin] an aluminum wheel for an automobile, said structure comprising:

(a) a resin film coated on said [member] aluminum wheel;

[(b')] (b) a thin metal film formed on said resin film, [said thin metal film being made from a material selected from the group consisting of stainless steel, a titanium alloy, a nickel alloy, aluminum, titanium and chromium, wherein said metal film has a smooth surface,] wherein said thin metal film is made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum; and

(c') a clear colored protective film coated on said thin metal film.

9. (Amended) A structure according to any one of claims 1, 2 and 3, wherein said thin metal film [is made from stainless steel or a titanium alloy and] has a thickness of 0.03-1.0 μ m.

20. (Amended) A method for manufacturing a [bright] surface structure formed on [a member made from a metal or a resin] an aluminum wheel for an automobile, said method comprising:

(a) coating a resin film on said [member such that said resin film has a smooth surface] aluminum wheel; and

(b) forming a thin metal film on said resin film, [said thin metal film being made from a material selected from the group consisting of stainless steel, a titanium alloy and a nickel alloy, wherein said metal film has a smooth surface] wherein said thin metal film is made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum formed by any one of cathode arc-type ion plating and sputtering using a sintered target containing titanium and aluminum.

22. (Amended) A method for manufacturing a [bright] surface structure formed on [a member made from a metal or a resin] an aluminum wheel for an automobile, said method comprising:

(a) coating a resin film on said [member such that said resin film has a smooth surface] aluminum wheel;

[(b')] (b) forming a thin metal film on said resin film, [said thin metal film being made from material selected from the group consisting of stainless steel, a titanium alloy and a nickel alloy, aluminum, titanium and chromium, wherein said metal film has a smooth surface] wherein said thin metal film is made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum formed by any one of cathode arc-type ion plating and sputtering using a sintered target containing titanium and aluminum; and

(c') coating a clear colored protective film on said thin metal film.

30. (Amended) A method according to any one of claims 20, 21 and 22, wherein said thin metal film [is made from stainless steel or a titanium alloy and] has a thickness of 0.03-1.0 μ m.

End of Appendix